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Two new species and a new record of *Hansfordia* from China

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Abstract —Two new species, *Hansfordia rosea, H. qinghaiensis,* and a new record of *H. caricis* are described and illustrated from soil in China. A key to the 13 accepted *Hansfordia* species is also provided. The specimens (dried cultures) and living cultures are deposited in the fungal reference collections of Shandong Agricultural University, Plant Pathology (HSAUP), and the Institute of Microbiology, Academia Sinica (HMAS).

Key Words — dematiaceous hyphomycetes, soil fungi, taxonomy

Introduction

The genus *Hansfordia* was established by Hughes (1951) with *H. ovalispora* as type species. The genus is characterized by solitary conidia produced in succession on conspicuous denticles (Barron 1968). Arx (1982) regarded this genus as a synonym of *Dicyma* Boulanger, but that view has not gained acceptance (Kirk et al., 2008); currently the two genera are distinguished by the presence of separating cells in *Hansfordia* and their absence in *Dicyma.* IndexFungorum lists 22 taxa, of which 11 are accepted by SpeciesFungorum (2015) while Seifert et al. (2011) estimated that the genus might contain only 7 valid species.

During a survey of soil dematiaceous hyphomycetes in China, several unusual species of *Hansfordia* were collected, of which two are described and

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illustrated here as new and one represents a new record for China. A key to all 13 *Hansfordia* species is provided below.

The three species covered here are described and illustrated from cultures grown on potato dextrose agar (PDA) according to Hughes (1951). Specimens (dried cultures) and living cultures were deposited in the Herbarium of Shandong Agricultural University, Plant Pathology, Tainan, China (HSAUP) and the Herbarium of Institute of Microbiology, Academia Sinica, Beijing, China (HMAS).

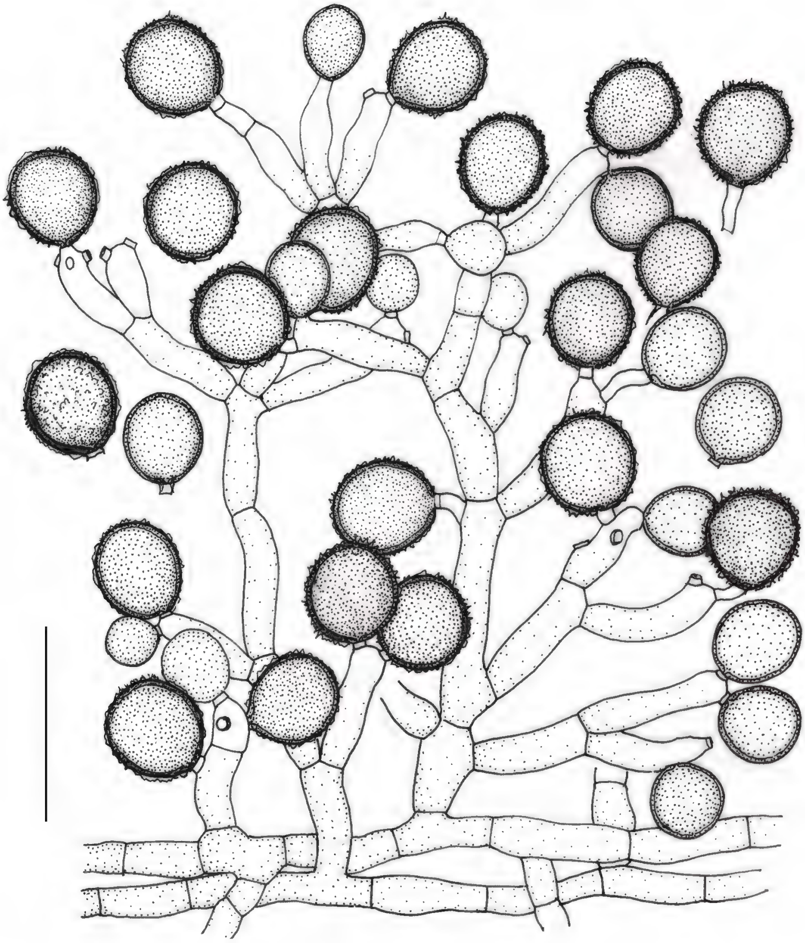

Fig. 1. *Hansfordia rosea* (ex holotype HSAUP II $_{04}$2794).
Conidia, conidiophores, and conidiogenous cells. Scale. bar = 20 µm.

Hansfordia rosea J.J. Xu & T.Y. Zhang, **sp. nov.** FIG. 1

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Differs from *Hansfordia pulvinata* by its bigger conidia.

TYPE: China, Zhejiang Province: Hangzhou, National Nature Reserve of Mount Tianmu, from a forest soil, 11 Sept. 2004, J.J. Xu (**Holotype**, HSAUP II $_{04}$2794; **isotype**, HMAS 196281; ex-type cultures, HSAUP II $_{04}$ 2794-1, HMAS 196284).

ETYMOLOGY: The epithet refers to the color of this species.

COLONIES on PDA after 7 days at 25 °C effuse, 40–50 mm diam., velvety, pink to pale red-brown. MYCELIUM mostly superficial, hyphae branched, septate, smooth, subhyaline, 3.5–7.5 µm diam. CONIDIOPHORES mononematous, macronematous, straight or flexuous, pale brown to subhyaline, with subhyaline branches, smooth-walled, 45 µm long and 3–6 µm wide. CONIDIOGENOUS CELLS integrated, terminal, sometimes intercalary. hyaline. Conidial secession rhexolytic by fracture of the wall of a small separating cell. CONIDIA solitary, acrogenous, later acropleurogenous, ellipsoidal, obovate to broadly subglobose, verrucose, 0-septate, pale brown to dark brown, 6.5–9 µm diam., hilum conspicuous.

COMMENTS: Morphologically, *Hansfordia rosea* resembles *H. pulvinata* (Berk. & M.A. Curtis) S. Hughes, which can be distinguished by its smaller conidia (4–7 µm; Hughes 1958).

Hansfordia qinghaiensis H.F. Wang & T.Y. Zhang, **sp. nov.** FIG. 2

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Differs from *Hansfordia alba* by its shorter and subhyaline conidia.

TYPE: China, Qinghai: Huzhu, North Mountain National Forest Park, from a forest soil, 10 Jun. 2006, H.F. Wang (**Holotype**, HSAUPII $_{06}$5193; **isotype**, HMAS 196282; ex-type cultures, HSAUP II $_{06}$5193-1, HMAS 196285).

ETYMOLOGY: in reference to the type locality.

COLONIES on PDA after 7 days at 25 °C effuse, 25–30 mm diam., velvety, with distinct radial furrows, gray-black. MYCELIUM superficial or immersed; hyphae branched, septate, smooth, brown, 2–3 µm diam. CONIDIOPHORES mononematous, straight or flexuous, pale brown to brown, with subhyaline branches, smooth-walled, ≤600 µm long and 3–5 µm diam. CONIDIOGENOUS CELLS integrated, terminal, sometimes intercalary, hyaline. Conidial secession rhexolytic by fracture of the wall of a small separating cell. CONIDIA solitary, acrogenous, later acropleurogenous, obovoid to fusiform, smooth, 0-septate, subhyaline, 4–6 × 2.5–3.5 µm, hilum conspicuous.

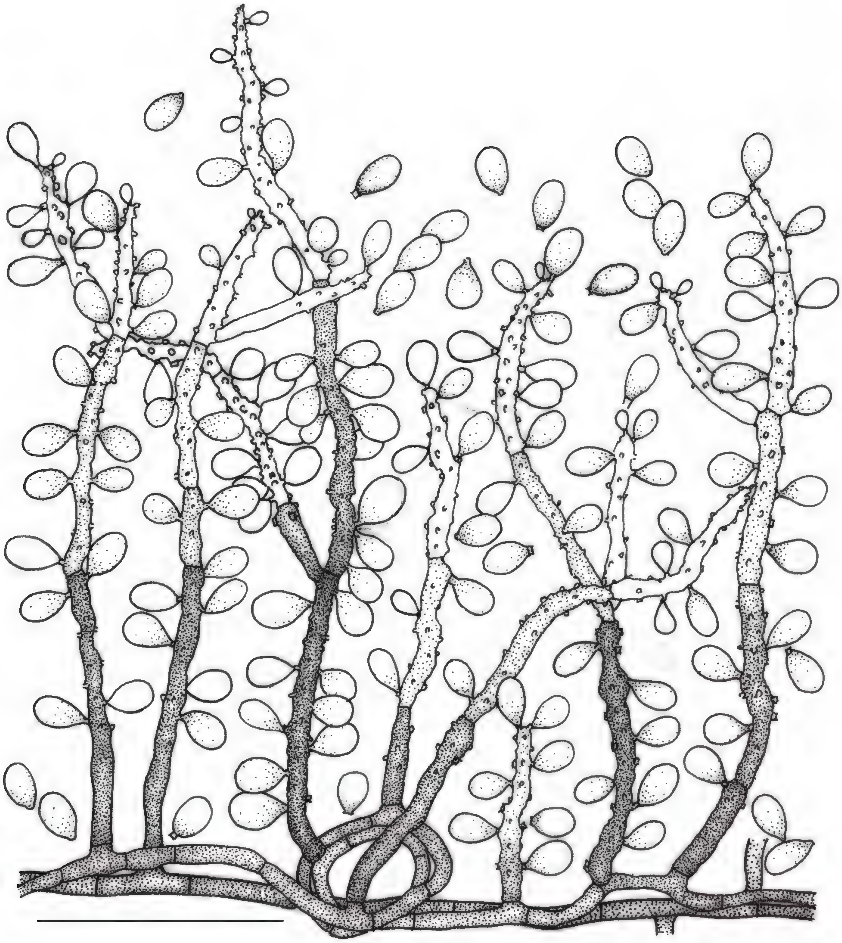

Fig. 2. *Hansfordia qinghaiensis* (ex holotype HSAUP II 065193).
Conidia, conidiophores, and conidiogenous cells. Scale bar = 20 µm.

Comments: Morphologically, *Hansfordia qinghaiensis* resembles *H. alba* J.A. Mey, which can be distinguished by its longer and hyaline conidia (7–9 × 2.5–3 µm; Meyer 1959).

Hansfordia caricis P.M. Kirk, Trans. Br. Mycol. Soc. 86: 415. 1986. Fig. 3

Colonies on PDA after 7 days at 25°C effuse, 30–35 mm diam., hairy or velvety, pale greyish brown to brown. Mycelium superficial or immersed; hyphae branched, septate, smooth, subhyaline to pale brown, 1.5–3 µm

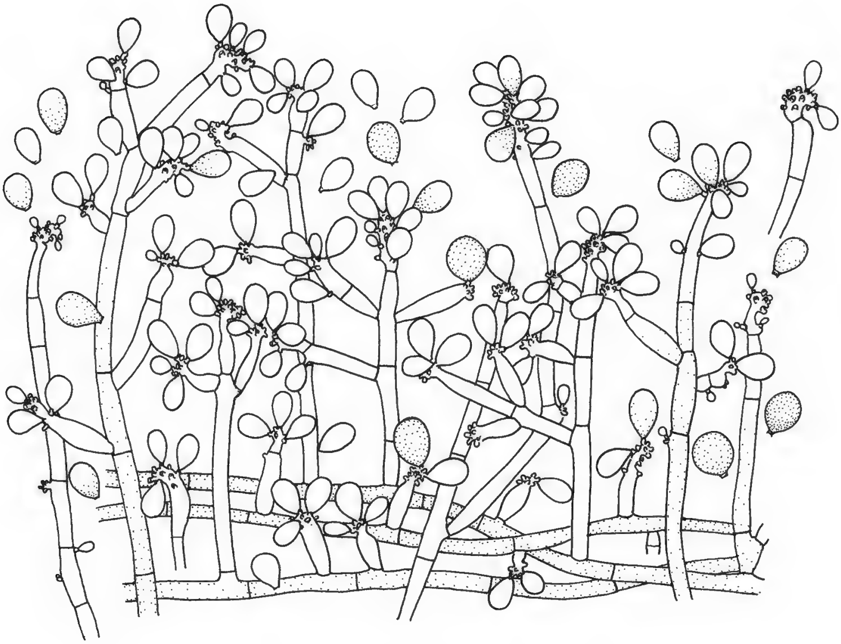

FIG. 3. *Hansfordia caricis* (HSAUP II $_{04}$3106).
Conidia, conidiophores, and conidiogenous cells. Scale bar = 20 µm

wide. CONIDIOPHORES mononematous, straight or flexuous, very pale brown to subhyaline, branched, smooth-walled, 50 µm long, 2.5–4 µm diam. CONIDIOGENOUS CELLS integrated, terminal, sometimes intercalary. Conidial secession rhexolytic by fracture of the wall of a small separating cell. CONIDIA solitary, acrogenous, later acropleurogenous, obovate to broadly ellipsoid, smooth, 0-septate, pale brown to hyaline, 5–8 × 3–4.5 µm, slightly protruding basal hilum about 0.5 µm diam.

SPECIMEN EXAMINED: **CHINA**. **MACAU**: Seac Pai Van Park, from a forest soil, 1 Jul. 2004, J.J. Xu (HSAUP II $_{04}$3106, HMAS 196283; cultures, HSAUP II $_{04}$3106-1, HMAS 196286).

Hansfordia caricis is reported for the first time in China. Our specimen shares obovate to broadly ellipsoid, 0-septate, smooth, very pale brown to hyaline conidia with a slight hilum and measuring 5–8 × 3–4.5 µm, as described by Kirk (1986). The species is most similar in conidial shape to *H. sinuosae* Wei Li & X.L. Cheng, which differs by its smaller conidia (4–6 × 3–4 µm; Cheng et al. 2011).

Key to species of Hansfordia

1. Conidial surface verruculose or echinulate 2
1. Conidial surface smooth 5

2. Conidia all hyaline, globose or ellipsoid . . . . *H. triumfettae*
2. Conidia not all hyaline 3

3. Conidia pale brown to dark brown, ellipsoid, obovate to broadly subglobose *H. rosea*
3. Conidia hyaline, very pale brown, or pale brown 4

4. Conidia subspherical to spherical, hyaline to pale brown . . . . *H. pulvinata*
4. Conidia obovoid to broadly ellipsoid, very pale brown . . . . *H. caricis*

5. Conidia subhyaline or hyaline 6
5. Conidia not subhyaline or hyaline 9

6. Conidia obovoid or fusiform 7
6. Conidia narrowly obovoid, ellipsoid or globose 8

7. Conidia fusiform, 7–9 × 2.5–3 µm . . . . *H. alba*
7. Conidia obovoid to fusiform, 4–6 × 2.5–3.5 µm . . . . *H. qinghaiensis*

8. Conidia narrowly obovoid to ellipsoid, 6–10 × 2.5–4 µm . . . . *H. parasitica*
8. Conidia ellipsoid to globose, 8–13.5 × 5.5–7.5 µm . . . . *H. pallens*

9. Conidia very pale brown, spherical or oval . . . . *H. canescens*
9. Conidia pale brown, brown or dark brown 10

10. Conidia ovoid, pale brown to dark brown . . . . *H. indica*
10. Conidia obovoid, turbinate, ellipsoid, subglobose to globose, pale brown or brown 11

11. Conidia broadly obovoid, turbinate or sometimes ellipsoid, brown . . . *H. catalonica*
11. Conidia ellipsoid, broadly subglobose to globose, pale brown 12

12. Conidia globose or ellipsoid, diam. 9.5–10 µm . . . . *H. arborescens*
12. Conidia ellipsoid to broadly subglobose, 4–6 × 3–4 µm . . . . *H. sinuosae*

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